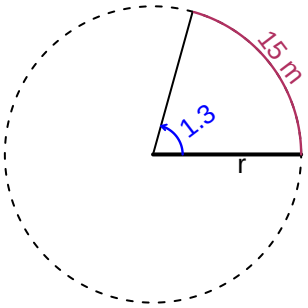
Name: Date:

# Trig Final (Practice v0)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

### Question 1

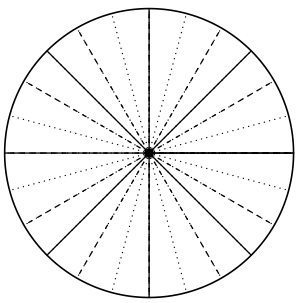
In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 1.3 radians. The arc length is 15 meters. How long is the radius in meters?




### Question 2

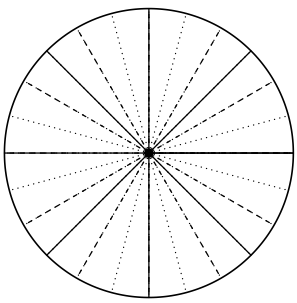
Consider angles $\frac{13\pi}{6}$ and $\frac{-11\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{13\pi}{6}\right)$ and $\cos\left(\frac{-11\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\frac{13\pi}{6}$



Find $\sin(13\pi/6)$

Mark $\frac{-11\pi}{4}$



Find $\cos(-11\pi/4)$

**Question 3**

If $\cos(\theta) = \frac{39}{89}$, and $\theta$ is in quadrant IV, determine an exact value for $\sin(\theta)$.

**Question 4**

A mass-spring system oscillates vertically with a midline at $y = -4.5$ meters, a frequency of 7.6 Hz, and an amplitude of 2.59 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height ($y$ in meters) as a function of time ($t$ in seconds).